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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,303	01/04/2002	Laurent Labrunie	Q67909	1962
23373	7590	06/27/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			LEUNG, CHRISTINA Y	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/035,303

Applicant(s)

LABRUNIE ET AL.

Examiner

Christina Y. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 12 is objected to because of the following informalities:

Claim 12 recites “whereinthe multiplexer is situated closed to a beach line” (sic).

Examiner respectfully suggests that Applicants change “closed” to “close” for grammatical reasons and include a space between “wherein” and “the.” Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. (US 6,614,567 B1) in view of Damen et al. (US 5,737,460 A).

Regarding claim 1, Al-Salameh et al. disclose an optical fiber transmission system (Figure 2), comprising

a transmitter terminal 220 launching an optical signal into a fiber line 275, the fiber line guiding the signal to a receiver terminal 225, the signal being composed of a multitude of bit-patterns at different wavelength channels within a given total bandwidth of wavelengths (output from the transmitting terminal), characterized in that the fiber line comprises, in its first section, of at least two branches (the branches of fiber output from multiplexers 205 and 255 and input to multiplexer 281),

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the transmitter launching into each one of the branches a separate part of the optical signal being composed of a sub-multitude of the bit-patterns at neighboring wavelength channels within non-overlapping bandwidth domains (Figure 2 shows wavelengths 1-M input into one of the branches, and wavelengths K-N input into the other branch; column 4, lines 49-61),

the parts of the signal being multiplexed together into a fiber by means of a multiplexer station 281 (column 5, lines 28-32).

Regarding claim 7, as similarly discussed above with regard to claim 1, Al-Salameh et al. disclose an optical fiber transmission system (Figure 2) comprising:

- a transmitter (including elements in terminal 220) which launches an optical signal into a fiber line 275; and

a receiver 225; and

a multiplexer 281;

wherein the fiber line guides the optical signal to the receiver, and the signal comprises different wavelength channels within a given total bandwidth of wavelengths, and

wherein the fiber line comprises:

a first section having at least two fiber branches (the branches of fiber output from multiplexers 205 and 255 and input to multiplexer 281), wherein the transmitter launches into each one of the branches a separate part of the optical signal being composed of a sub-multitude of wavelength channels within non-overlapping bandwidth domains (Figure 2 shows wavelengths 1-M input into one of the branches, and wavelengths K-N input into the other branch; column 4, lines 49-61), and

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the parts of the signal are multiplexed into a fiber by the multiplexer 281 (column 5, lines 28-32).

Regarding both claims 1 and 7, Al-Salameh et al. do not specifically disclose that the multiplexer 281 is located not closer to the transmitter terminal such that the sum of the total optical powers guided by each of the branches plus the losses due to the multiplexing has decreased below the total optical power that is associated with a maximum optical power budget in the fiber guiding the full bandwidth of wavelengths.

However, it is well understood in the art, and Damen et al. particularly teach, that while the launch power of signals into a fiber should be high enough to ensure that they reach the receiving equipment at the other end, the launch power of the signals is limited by nonlinear optical effects that distort the signals (column 1, lines 14-67). Regarding claims 1 and 7, it would have been obvious to a person of ordinary skill in the art to ensure that the multiplexer station disclosed by Al-Salameh et al. is located in such a way as to ensure that the power of the output of the multiplexer station does not exceed the maximum optical power budget in the fiber guiding the full bandwidth of wavelengths as suggested by Damen et al. in order to prevent the occurrence of nonlinear optical effects and distortion in the fiber.

Regarding claims 2 and 8, Al-Salameh et al. disclose that the full bandwidth of wavelength is split into two domains (Figure 2 specifically shows two domains, wavelengths 1-M and wavelengths K-N).

Regarding claims 3 and 9, Al-Salameh et al. disclose that the C-band of approximately 1529-1562 nm and the L-band of approximately 1569-1604 nm are used as bandwidth domains launched into dedicated fiber branches (column 12, lines 12-18).

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4. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. in view of Damen et al. as applied to claims 1 and 7 respectively above, and further in view of Ruffin (US 4,606,020 A).

Regarding claims 4 and 10, Al-Salameh et al. in view of Damen et al. describe a system as discussed above with regard to claims 1 and 7 including a fiber, but Al-Salameh et al. do not specifically further disclose that the two fiber branches are embedded in the same terrestrial fiber cable.

However, Ruffin teach a system related to the one described by Al-Salameh et al. in view of Damen et al. including wavelength division multiplexing signals onto a unique fiber (Figure 1; column 2, lines 36-50). Ruffin further teaches that two fiber branches (such as fibers 2-1 and 2-2) may be embedded in a same terrestrial fiber cable (bundled together within sheath 3).

Regarding claims 4 and 10, it would have been obvious to a person of ordinary skill in the art to embed the two fiber branches in the system described by Al-Salameh et al. in view of Damen et al. as taught by Ruffin in order to transmit the two branches of signals along the same physical path and subsequently bring the signals on each branch together for multiplexing as already disclosed by Al-Salameh et al. One in the art would have been particularly motivated to combine the fiber cable taught by Ruffin with the system described by Al-Salameh et al. in view of Damen et al. in order to provide a compact and efficient means for multiplexing the signals (Ruffin, column 2, lines 55-59).

5. Claims 5, 6, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Al-Salameh et al. in view of Damen et al. as applied to claims 1 and 7 above, and further in view of Kerfoot, III et al. (US 6,704,511 B1).

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Regarding claims 5, 6, 11, and 12, Al-Salameh et al. in view of Damen et al. describe a system as discussed above with regard to claims 1 and 7 including a fiber, but Al-Salameh et al. do not specifically further disclose that the fiber is embedded in a submarine fiber cable. However, Kerfoot, III, et al. teach a system related to the one described by Al-Salameh et al. in view of Damen et al., including wavelength division multiplexing signals from a multiplexer station onto a fiber (Figure 3 shows multiplexer station 132 and fiber 106).

Kerfoot, III, et al. further particularly teach, that multiplexed optical signals may be sent along a submarine fiber cable (Kerfoot, III, et al.; Figures 1 and 3; column 1, lines 41-47; column 3, lines 15-28).

Kerfoot, III, et al. also teach that in the same system including a submarine fiber cable, the multiplexer station is situated close to a beach line (i.e., located on land close to the body of water, or in other words, a beach location; Figure 1 shows head end 130 while Figure 3 shows multiplexer 132 within head end 130).

Regarding claims 5, 6, 11, and 12, it would have been obvious to a person of ordinary skill art to have the fiber in the system described by Al-Salameh et al. in view of Damen et al. be a submarine fiber cable as taught by Kerfoot, III, et al., and it would have been obvious to a person of ordinary skill art to have the multiplexer station in the system described by Al-Salameh et al. in view of Damen et al. be situated close to a beach line as taught by Kerfoot, III et al., in order to arrange the communications system for transmitting long distances across a body of water and communicate signals between particular locations as desired by users.

Response to Arguments

6. Applicants' arguments filed 03 March 2005 have been fully considered but they are not persuasive.

First, Examiner respectfully disagrees with Applicants' assertion on page 11 of their response that "there is no disclosure of the terminal 220 sending signals in at least two separate branches." Examiner respectfully notes that the transmitter terminal 220 disclosed by Al-Salameh et al. clearly performs the function of launching into each of two branches, a separate part of the optical signal, whereby the branches are simply located within the labeled element 220 as shown in Figure 2. Examiner also respectfully notes that a subset of the elements shown within element 220 may be alternatively considered a "transmitter," wherein the outputs of multiplexers 205 and 255 provide transmitted output signals that are launched into each of two branches.

Second, Examiner respectfully disagrees with Applicants' assertion on page 12 of their response that "just because it is obvious to keep the power below a threshold, it is not obvious to position the multiplexer at a position (with respect to the transmitter) as claimed. One simply does not logically follow from the other."

Examiner respectfully notes that in a system such as disclosed by Al-Salameh et al., where a multiplexer is placed to join the optical power from two signal branches, it would have been obvious to a person of ordinary skill in the art to ensure that the resulting combined optical power does not exceed the maximum optical power budget in the fiber guiding the full bandwidth of wavelengths because of teachings (such as provided by Damen et al.) that signal launch power is limited by nonlinear optical effects that distort the signals (Damen et al., column

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1, lines 14-67). Therefore, a person of ordinary skill in the art, using the teaching of Damen et al., would be motivated to simply place the multiplexer at a distance further down the two branches if combining the optical powers at any closer point resulted in a total power on the single fiber that exceeded the maximum power budget.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306 until July 15, 2005 (on or after July 15, 2005, the fax number is 571-273-8300).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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